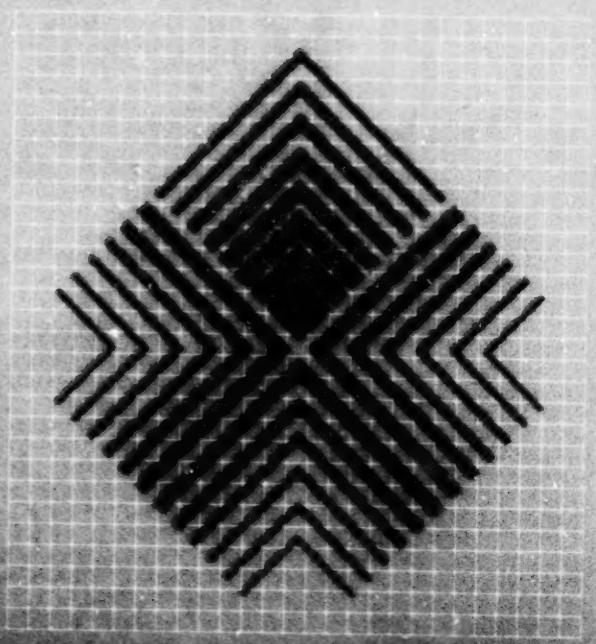
Labour Market Outlook for Ontario: 1984-88



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LABOUR MARKET OUTLOOK FOR ONTARIO: 1984-88

ONTARIO MANPOWER COMMISSION

ONTARIO MINISTRY OF LABOUR

AUGUST 1984

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FOREWORD

This is an update of the Ontario Manpower Commission's report on the Labour Market Outlook for Ontario, 1981-86. It provides an assessment of the potential new pressures on the labour market in Ontario over the 1984-88 period under different economic scenarios. The assessment is by broad educational categories for the province and, as such, may mask imbalances in individual labour markets at the regional and/or occupational level.

This report is intended to serve both the public and private sectors as a guide to developing suitable responses to the potential imbalances in the labour market. Therefore, aside from its use by government departments and agencies, this report should also be of interest to educational planners, career counsellors, human resource planners in industry, labour and professional associations.

The Commission intends to update this study periodically and, if feasible, to include more occupational detail. Through this process of continuous review, both the methodology and findings of the study should undergo a gradual refinement, which will make it a progressively better tool for analysing the labour markets in Ontario.

Benson A. Wilson
Chairman
Ontario Manpower Commission

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INTRODUCTION

The purpose of this report is to examine the potential new pressures on the labour market in Ontario over the 1984-88 period. To do so, we provide projections of job openings and of additions to the labour supply by level of education/training. The report does not, however, attempt to provide a comprehensive analysis of the total demand for, and supply of, labour; rather, it offers a comparison of projected job openings and additions to the labour supply in the province.

Future manpower requirements in Ontario depend on many factors, including the level of economic activity, demographic changes and technological innovations. Some of these factors are difficult to assess and are subject to a good deal of uncertainty. The approach adopted for this report is to present the projections of manpower requirements based on a range of possible economic outlooks for Canada and Ontario rather than one single forecast. The Commission requested the Institute for Policy Analysis at the University of Toronto to prepare three alternative macroeconomic scenarios for high-, medium- and low-growth cases. With these as a base, this report presents projections of job openings for a range of possible economic futures.

Projected additions to the supply side of the labour market include all major sources, i.e. the education sector, the household sector, the armed forces, net interprovincial and international migration and skills training programs. Supply from the various sources may fluctuate to a greater or lesser extent depending upon the economic scenario. However, the total additions to the supply side of the labour market are fairly stable relative to the demand side. Therefore, to simplify the presentation of projected new entrants by source, this report provides a single projection of additions to the labour supply. Currently unemployed workers are also considered as a potential source of supply, however, they are not explicitly included in the analysis due to lack of data.

Potential labour market pressures can be identified by comparing the projected additions to the labour supply with the projections of manpower requirements. In other words, the comparison demonstrates the extent to which the additions to the labour supply, if recent trends continue, will meet the job openings projected for Ontario over the 1984-88 period. In this sense, the purpose of the report is not to forecast what will or should happen in the future, but rather to present likely labour market scenarios based on different sets of assumptions. While considerable judgement should be exercised in interpreting these results, it should aid decision makers within and outside the government to develop appropriate responses to the potential labour market imbalances in the province.

Chapter I provides information on the projected number of job openings by industry and on the education/training requirements for them. Chapter II examines expected additions to the labour supply and their educational/training qualifications. Chapter III concludes with a discussion of the potential new pressures on the labour market arising from imbalances between projected job openings and additions to the labour supply over the 1984-88 period. The appendices detail the methodologies and related assumptions used in this report.

HIGHLIGHTS

The major findings of the report are:

- The low-growth scenario indicates job openings would fall short of the number of new entrants to the labour market in Ontario. Both the medium- and high-growth scenarios indicate overall job openings would exceed the number of new entrants. These two scenarios suggest that there would be employment opportunities for both new workers and currently unemployed workers.

- The largest category of new entrants to the labour market consists of those who have not completed university or college education and those who have no more than six months of specific vocational training. In the low-growth scenario, job openings would fall short of the number of new entrants. In the medium- and high-growth scenarios, the number of job openings would slightly exceed the number of new entrants. One must remember, however, that the new entrants would be competing with approximately 70 per cent of the currently unemployed workers who also have this level of qualification.

- Job prospects for skilled workers with more than six months of specific vocational training appear to be good. In the low-growth scenario, the number of job openings requiring this skill level would almost match the additions to the supply of skilled workers from the education sector, armed forces, migration, apprenticeship and insititutional and industrial training programs. In the medium- and high-growth scenarios, job openings in this category would number approximately twice as many as the additions to the supply of skilled workers. The difference may be overstated as data on the number of workers being trained by industry are not included in the report.

Once the currently unemployed skilled workers are reabsorbed into the labour force, there could be a re-emergence of the challenge of providing enough training to replace retiring workers and to support economic growth.

- The employment outlook for university and community college graduates appears to be promising. Even if the economy remains stagnant, it would have almost as many job openings requiring post secondary graduation as the number of new entrants with these qualifications. If it speeds up to the level of the medium- or high-growth scenarios, the projected job openings would slightly outnumber the combined total of new and currently unemployed graduates.

The comparison between projected job openings and additions to the labour supply are by broad education/training categories, designed to give a general picture of the labour market in Ontario over the next five years. Aggregate labour market trends, however, may mask imbalances in regional and occupational labour markets. One must, therefore, exercise judgement in interpreting these results.

CHAPTER I

PROJECTED JOB OPENINGS

The total number of job openings that become available in the economy is the sum of those arising from net growth in employment and those arising from the need to replace workers who die, retire or otherwise withdraw from employment.[1]

Job openings due to growth were derived from the employment projections for Ontario based on the three macroeconomic scenarios developed by the Institute for Policy Analysis. They differ primarily in the assumptions used about the United States' real growth path and domestic changes in real interest rates, investment behaviour and labour productivity.[2]

Total Job Openings

Table 1 presents projected job openings due to economic growth and replacement needs under high-, medium- and low-growth. The job openings that are likely to become available in Ontario over the 1984-88 period range from 536,800 in the low-growth scenario to 937,500 in the high-growth scenario. This wide fluctuation is due to the sensitivity of growth openings to prevailing economic conditions. In the low-growth scenario, net employment growth over the 1984-88 period will total 184,200. This number more than triples in the high-growth scenario.

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[1] Replacement needs for a particular type or level of employment are also affected by attrition due to other factors such as inter-occupational moves. However, since no data are available on job openings due to inter-occupational movement, the estimates of replacement needs presented in this report include only the number of jobs that are expected to become available because of deaths, retirement and other age related withdrawals from the work force.

The methodology for estimating replacement needs due to deaths and withdrawals from the work force is provided in Appendix III.

[2] A description of the major assumptions for each of these scenarios and a summary of the projections for both Canada and Ontario are provided in Appendix I. Appendix II compares the Institute for Policy Analysis projections used in this report with other currently available projections.

TABLE 1

PROJECTED JOB OPENINGS DUE TO GROWTH AND REPLACEMENT NEEDS, TOTAL AND ANNUAL AVERAGE: ONTARIO, 1984-88

SCENARIOS	JOB OPENINGS: 1984 - 88							
	TOTAL				ANNUAL AVERAGE			
	Growth Openings	Replacement Openings	Total Openings	% Replacement	Growth Openings	Replacement Openings	Total Openings	% Replacement
LOW-GROWTH	184,200	352,600	536,800	65.7	36,800	70,500	107,400	65.6
MEDIUM-GROWTH	503,500	352,600	856,100	41.2	100,700	70,500	171,200	41.2
HIGH-GROWTH	584,900	352,600	937,500	37.6	117,000	70,500	187,500	37.6

Note: Figures may not add up to totals because of rounding.

Estimates of job openings due to replacement needs are based on demographic factors alone and, therefore, are treated as constant across scenarios in this report. Over the 1984-88 period, 352,600 job openings are expected to become available in Ontario due to replacement needs. However, due to the fluctuations in growth openings from scenario to scenario, replacement needs account for two-thirds of the total job openings in the low-growth scenario, but represent only slightly over a third of the total in the high-growth scenario.

Job Openings by Industry

Depending upon the economic scenario, the source of and relative contribution to total job openings varies significantly among industries. Table 2 shows the number and percentage distribution of job openings by industry for the high-, medium- and low-growth scenarios. Table 3 shows the proportion of total job openings due to replacement needs by industry for the three scenarios.

Service Industries

The service industries are Ontario's largest industries in terms of employment and are of continually growing importance to its economy. Therefore, it is not surprising that they are the major contributors to job openings in the province in all three scenarios. Within these industries, community, business and personal services sector is the major contributor to job openings with 341,900 job openings in the low-growth scenario and 375,000 job openings in the high-growth scenario.

However, the proportion of job openings arising in the service industries decline from the low-growth to the high-growth scenario as economic activity and job openings pick up in the goods producing industries. Figure 1 shows that in the low-growth scenario, service industries account for about 95 per cent of the total job openings in Ontario over the 1984-88 period. In the high-growth scenario, these industries are still the major contributors, but their share drops to 72 per cent.

TABLE 2

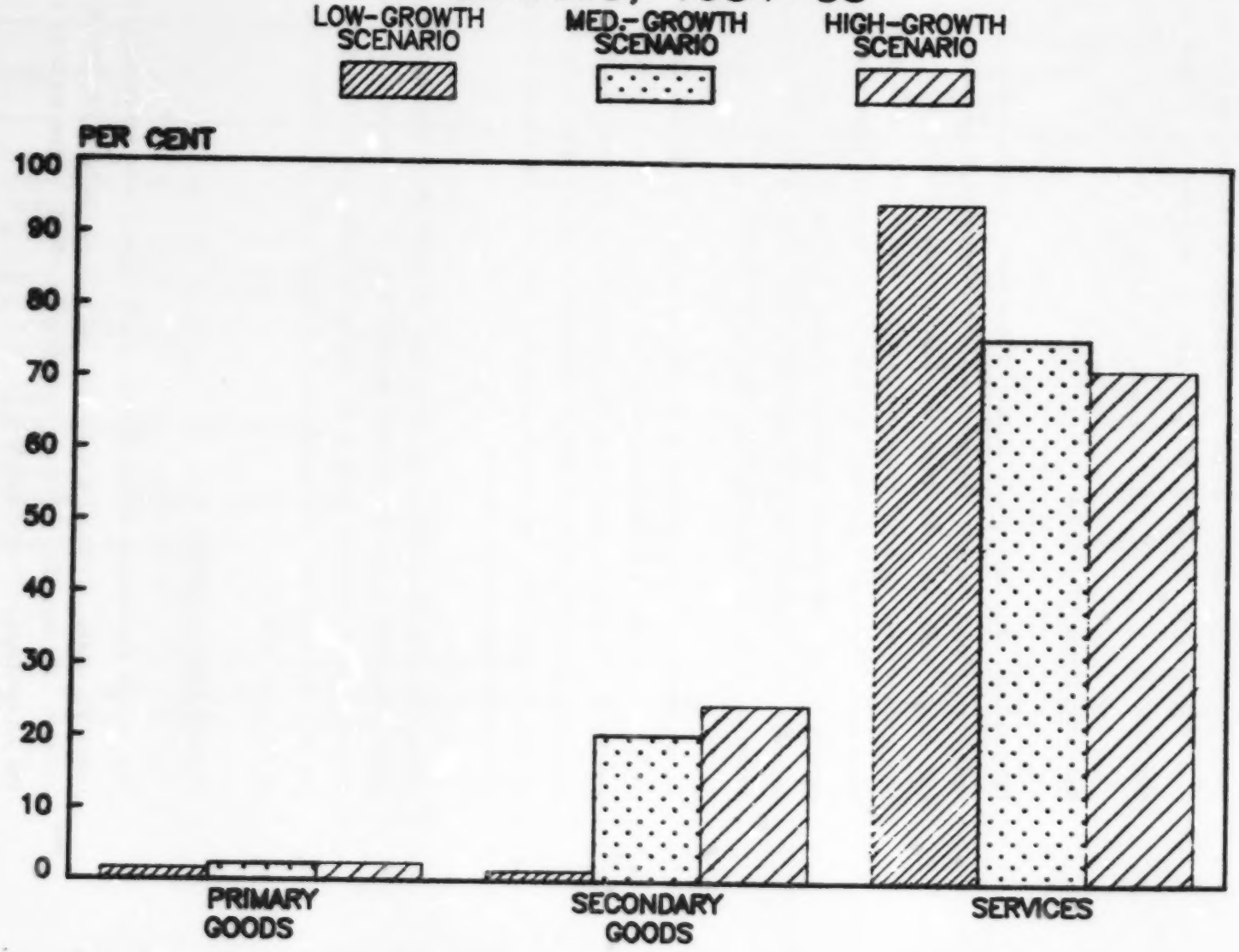
PROJECTED TOTAL JOB OPENINGS AND PERCENTAGE DISTRIBUTION BY INDUSTRY: ONTARIO, 1984-88

INDUSTRY	TOTAL JOB OPENINGS			PERCENTAGE DISTRIBUTION		
	Low-Growth Scenario	Medium-Growth Scenario	High-Growth Scenario	Low-Growth Scenario	Medium-Growth Scenario	High-Growth Scenario
Primary Goods	8,500	19,500	22,800	1.6	2.3	2.4
Agriculture/Fishing	7,700	13,100	13,800	1.4	1.5	1.5
Forestry	-1,100	100	600	-0.2	0.0	0.1
Mining	1,900	6,300	8,400	0.3	0.7	0.9
Secondary Goods	6,800	174,300	230,500	1.3	20.4	24.6
Manufacturing	600	130,000	167,500	0.1	15.2	17.9
Construction	100	36,100	54,600	0.0	4.2	5.8
Utilities	6,100	8,200	8,400	1.1	1.0	0.9
Services	508,000	648,700	670,600	94.6	75.8	71.5
Transportation/Communications	20,700	36,500	39,600	3.8	4.3	4.2
Trade	42,000	112,300	134,200	7.8	13.1	14.3
Finance	56,100	69,500	71,100	10.5	8.1	7.6
Community, Business and Personal Services	341,900	380,800	375,000	63.7	44.5	40.0
Public Administration	47,300	49,600	50,700	8.8	5.8	5.4
Unspecified Industries	13,500	13,500	13,500	2.5	1.6	1.4
TOTAL	536,800	856,100	937,500	100.0	100.0	100.0

Note: Figures may not add up to totals because of rounding.

FIGURE 1

PROJECTED TOTAL JOB OPENINGS BY INDUSTRY, ONTARIO, 1984–88



Replacement needs are significant in the service industries, but they are less important than employment growth as a source of job openings. As Table 3 indicates, between 58 per cent (low-growth scenario) and 68 per cent (high-growth scenario) of job openings are due to growth in employment.

Secondary Goods Industries

Because the secondary goods industries especially manufacturing, rely heavily on export markets, the number of job openings in these industries are much more sensitive than the service industries to alternative assumptions about external economic factors. The manufacturing sector experiences the most significant increase in job openings from the low-growth to the high-growth scenario. Table 2 shows that only 600 job openings are projected for the manufacturing sector in the low-growth scenario, but the high-growth scenario projects 167,500.

As the number of job openings in the secondary goods industries increase from the low-growth to the high-growth scenario, so do their proportion of the total. Figure 1 shows that the proportion of job openings in the secondary goods industries is almost negligible at 1.3 per cent in the low-growth scenario, but they increase significantly reaching almost 25 per cent, in the high-growth scenario.

Replacement needs account for all of the job openings in the secondary goods industries in the low-growth scenario and for the majority in the medium-growth scenario. Only in the high-growth scenario is employment growth more important than replacement needs as a source of job openings, as shown in Table 3.

Primary-Goods Industries

The overall contribution of the primary-goods industries to job openings is relatively small, representing about two per cent of the total job openings between 1984 and 1988. Replacement needs account for the majority of the job openings in these industries.

TABLE 3

REPLACEMENT NEEDS AS A PERCENTAGE OF TOTAL JOB OPENINGS BY INDUSTRY: ONTARIO, 1984-88

INDUSTRY	LOW-GROWTH SCENARIO	MEDIUM-GROWTH SCENARIO	HIGH-GROWTH SCENARIO
Primary Goods	-	95.4	81.6
Agriculture/Fishing	-	-	-
Forestry	-	-	-
Mining	-	52.4	39.3
Secondary Goods	-	62.2	47.0
Manufacturing	-	65.5	50.8
Construction	-	49.9	33.0
Utilities	86.9	64.6	63.1
Services	41.7	32.7	31.6
Transportation/Communications	-	67.1	61.9
Trade	-	46.7	39.1
Finance	31.2	25.2	24.6
Community, Business and Personal Services	26.1	23.4	23.8
Public Administration	59.8	57.1	55.8
TOTAL	65.7	41.2	37.6

Note: No estimate is shown when replacement needs are greater than total job openings (as a result of a net decline in employment) in a given industry.

Job Openings by Level of Education/Training[3]

For the purposes of this report, jobs were classified according to the minimum level of formal education or specific vocational training normally required for working in them. The six categories of jobs are those requiring:

- university graduation.
- university or college graduation.
- college graduation.
- specific vocational training of over two years.
- specific vocational training of over six months up to and including two years.
- specific vocational training of up to and including six months/less than college or university graduation.

As the industrial contribution to the total job openings that become available in Ontario varies, so do the education and training qualifications required to fill these jobs. Table 4 presents projected job openings by level of education/training for the low-, medium- and high-growth scenarios.

Job openings that require post-secondary graduation from a university or college occur in a variety of industry sectors and, therefore, are less likely than other kinds of job openings to be affected by events in any one sector. The number of job openings that require post-secondary graduation ranges from 184,900 in the low-growth scenario to 279,300 in the high-growth scenario. The proportion of job openings in this category drops slightly from 34 per cent in the low-growth scenario to 30 per cent in the high-growth scenario (see Table 4 and Figure 2).

Job openings that require more than six months of specific vocational training are concentrated in the goods-producing industries and are, therefore more sensitive to the economic environment. The number of job openings in this category is projected to increase across scenarios: from

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[3]A brief description of the methodology used to obtain these estimates is provided in Appendix IV.

TABLE 4

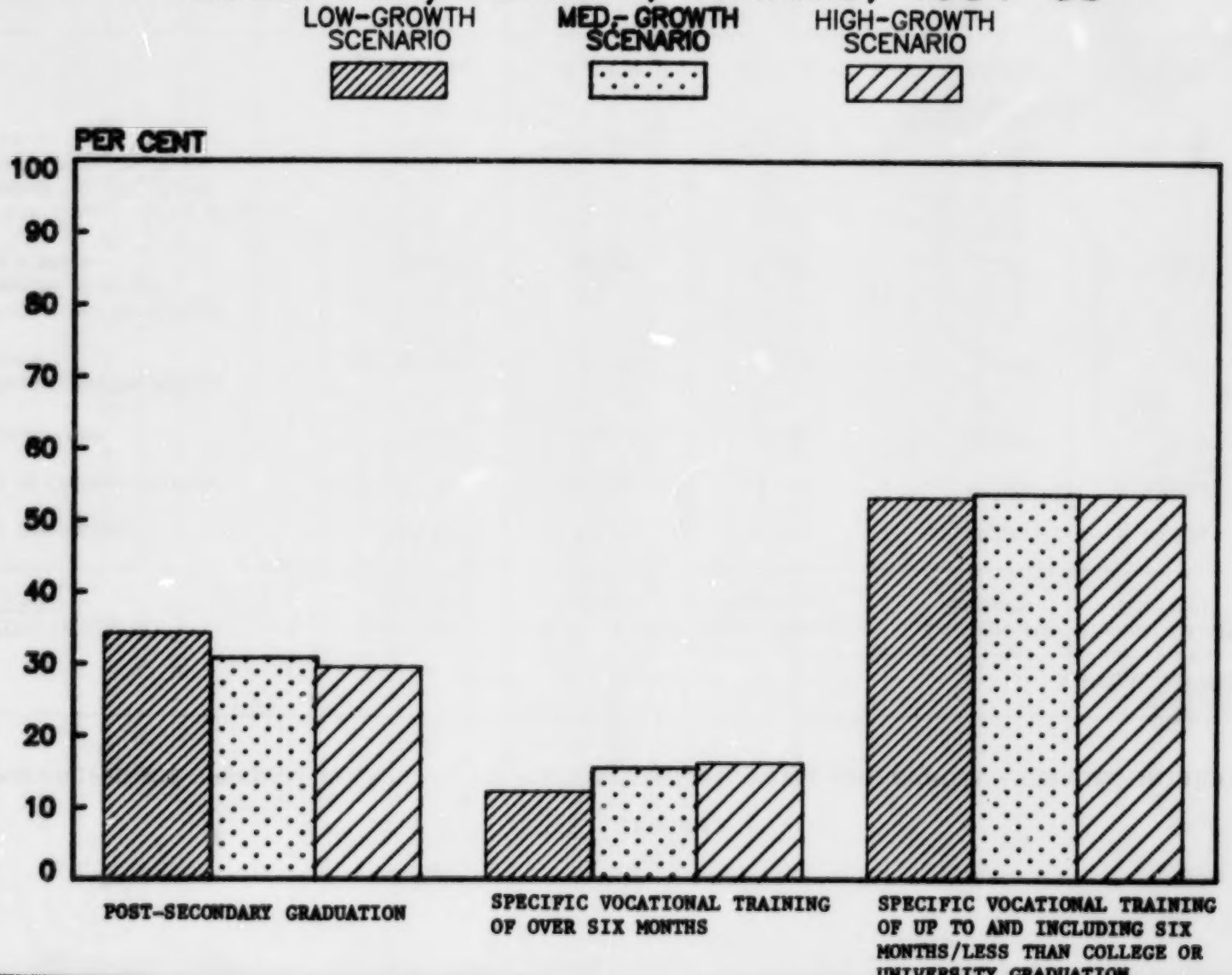
PROJECTED JOB OPENINGS BY LEVEL OF EDUCATION/TRAINING, TOTAL AND ANNUAL AVERAGE: ONTARIO, 1984-88

EDUCATION/TRAINING REQUIRED	TOTAL JOB OPENINGS			ANNUAL AVERAGE		
	Low-Growth Scenario	Medium-Growth Scenario	High-Growth Scenario	Low-Growth Scenario	Medium-Growth Scenario	High-Growth Scenario
University Graduation	47,400	67,400	71,600	9,500	13,500	14,300
University or College Graduation	87,200	124,000	131,700	17,400	24,800	26,300
College Graduation	50,300	71,500	76,000	10,100	14,300	15,200
Specific Vocational Training of over 2 years	40,800	82,400	94,600	8,200	16,500	18,900
Specific Vocational Training of over 6 months up to and including 2 years	25,000	50,500	58,000	5,000	10,100	11,600
Specific Vocational Training of up to and including 6 months/Less than College or University Graduation	286,100	460,400	505,700	57,200	92,100	101,100
TOTAL	536,800	856,100	937,500	107,400	171,200	187,500

Note: Figures may not add up to totals because of rounding.

FIGURE 2

PROJECTED TOTAL JOB OPENINGS BY LEVEL OF EDUCATION/TRAINING, ONTARIO, 1984–88



65,800 in the low-growth scenario to 152,600 in the high-growth scenario. The proportion of job openings in the same category increases from 12 per cent in the low-growth scenario to 16 per cent in the high-growth scenario.

The number of job openings that do not require post-secondary graduation or specific vocational training of more than six months is projected at 286,100 in the low-growth scenario and 505,700 in the high-growth scenario over the 1984-88 period. Job openings in this category have a broad range of education/training requirements - from some university or college education to some secondary schooling to specific vocational training of up to and including six months.

Summary

This chapter has presented projections of job openings for Ontario over the next five years under three alternative economic scenarios. It also provides information on the industrial composition of job openings and the education/training levels associated with them.

- Between 1984 and 1988, total projected job openings in Ontario range from 536,800 in the low-growth scenario to 937,500 in the high-growth scenario.

- The industrial composition of the job openings varies by scenario as shown below:

Industry	Low-Growth (%)	High-Growth (%)
Service	95	72
Secondary Goods	1	25
Primary Goods	2	2
Unspecified	3	1

- As the industrial contribution to total job openings varies, so do the education/training qualifications required to fill them.

Education/Training Level	Low-Growth (%)	High-Growth (%)
Post-secondary graduation	34	30
Specific vocational training of over six months	12	16
Less than Post-secondary graduation/ specific vocational training of up to and including six months	54	54

Job openings, however, are only part of the picture. To gauge the extent of labour market imbalance, it is necessary to compare projected job openings with additions to the labour supply. The next chapter presents projected additions to the labour supply by source and level of education/training.

CHAPTER II

PROJECTED ADDITIONS TO THE LABOUR SUPPLY

New entrants to the Ontario labour force come from many sources, principally:

- the education sector. These entrants include graduates and non-graduates of secondary schools, colleges and universities.[1]
- the household sector. These entrants are non-students re-entering or entering the labour force; most are adult women.
- the armed forces. These entrants are members of the armed forces returning to civilian life.
- net interprovincial and international migration. These entrants are persons coming to Ontario from other provinces or countries.

Entrants from all these sources increase the size of the total labour force. Another significant source of supply is the training system, which includes apprenticeship and institutional and industrial training programs, as well as formal and informal on-the-job training provided by employers. Because it is aimed primarily at upgrading, training or retraining persons already in the labour force, the training system does not substantially affect the size of the total labour force. It does, however, affect the supply of workers in individual occupations.[2]

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[1] New entrants to the labour force from private vocational schools are not included in this report because the available data on such schools are inadequate to estimate the supply from this source.

[2] Little information is available on the extent and nature of the training activity provided by employers. Therefore, it is not possible to estimate the supply of skills from this source. The Ontario Manpower Commission is currently undertaking a major survey of training activities in industry.

The flow of new entrants from each of these sources is affected by many factors, notably demography and the state of the economy. However, the overall additions to the supply side of the labour market, over a five year period, are fairly stable relative to the demand side.[3] Therefore, to simplify the presentation, a single projection of new entrants to the labour force is provided in this chapter.

The Education Sector[4]

The education sector is the single largest source of new labour force entrants in Ontario. Although the enrolment and graduation may fluctuate slightly from year to year, the numbers of entrants from this source are fairly predictable. They are primarily determined by the cohort size, and most of the students likely to enter the labour market in Ontario over the next five years are already enrolled in the education system.

We expect 1.1 million full-time students to graduate from the province's secondary schools, colleges and universities between 1984 and 1988. Approximately 617,700 full-time students are projected to withdraw from educational institutions without completing their programs.

Not all school leavers enter the labour force. Some continue their education, others leave the province, and still others return to the household sector. Moreover, a significant proportion of full-time students are labour force participants. In fact, only 500,500 of the 1.7 million full-time students graduating or withdrawing from the education sector during the projection period are expected to become new members of Ontario's labour force.

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[3]Appendix Table 3 summarizes projected average annual growth rates for employment and the labour force across economic scenarios. While employment growth rates fluctuate from 0.9 per cent in the low-growth scenario to 2.7 per cent in the high-growth scenario, that of the labour force varies over a much narrower range from 1.2 per cent in the low-growth scenario to 1.6 per cent in the high-growth scenario.

[4]See Appendix V for data sources and a description of the methodology and assumptions used in projecting labour supply from the

The 100,100 persons per year entering the labour force from the education sector are expected to have the following levels of education:

- about 19 per cent (19,200 persons) with a university degree.
- about 13 per cent (12,900 persons) with a college certificate or diploma.
- about 22 per cent (21,900 persons) with some post-secondary education.
- about 20 per cent (19,900 persons) with a high school education.
- about 26 per cent (26,200 persons) with less than a Grade 12 education.

The Household Sector[5]

The household sector is the second largest source of additions to labour supply in Ontario. During the 1984-88 period, about 144,300 persons, an average of 28,900 per year, are expected to enter Ontario's labour force from this sector.

Their distribution by level of education/training is projected as:

- about six per cent (1,600 persons per year) with a university degree.
- about nine per cent (2,700 persons per year) with a college diploma or certificate.
- about 85 per cent (24,600 persons per year) with less than a post-secondary graduation.

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[5]See Appendix VI for a description of the methodology and assumptions used in projecting labour supply from the household sector.

The Armed Forces[6]

Although the armed forces do not contribute significantly to Ontario's overall labour supply, they are an important source for some occupations. During the 1984-88 period, about 10,000 members of the armed forces — an average of 2,000 per year — are expected to join the civilian labour force in Ontario.

Their distribution by level of education/training is projected as:

- about 10 per cent (200 persons per year) with a university degree.
- about five per cent (100 persons per year) with a college certificate or diploma.
- about 20 per cent (400 persons per year) with specific vocational training of over two years.
- about 15 per cent (300 persons per year) with specific vocational training of over six months up to and including two years.
- about 50 per cent (1,000 persons per year) with specific vocational training of up to and including six months/less than university or college graduation.

Net Migration[7]

Total net migration reflects the population exchanges between Ontario and the other provinces (interprovincial migration) and between Ontario and other countries (international migration).

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[6]The projections for the armed forces are based on unpublished data received from the Department of National Defense (DND) and discussions with DND officials.

[7]See Appendix VII for a description of the methodology and assumptions in projecting labour supply due to net migration.

During the last decade, net inter-provincial migration to Ontario fluctuated considerably. The previous large outflows from Ontario to Alberta and British Columbia have now reversed. Therefore, for the purposes of this report, Ontario is projected to be a net gainer from interprovincial migration over the projection period.

With the reduced federal government target levels, there will be fewer immigrants coming to Canada and Ontario. Therefore, immigration may play a less important role as a source of skilled labour in the future.

Total net migration is projected to be about 143,600 persons during the 1984-88 period, or 28,700 persons per year. Of these, only about 13,000 per year are expected to enter the Ontario labour force. Their distribution by level of education/training is expected to be:

- about 15 per cent (2,000 persons per year) with a university degree.
- about 15 per cent (2,000 persons per year) with a college diploma or certificate.
- about nine per cent (1,100 persons per year) with specific vocational training of over two years.
- about five per cent (600 persons per year) with specific vocational training of over six months up to and including two years.
- about 56 per cent (7,300 persons per year) with specific vocational training of up to and including six months/less than university or college graduation.

Apprenticeship

Apprenticeship in Ontario is a systematic program of on-the-job training and related classroom instruction designed to produce fully qualified tradespeople or journeymen as prescribed in the Apprenticeship and Tradesmen's Qualification Act.

It is worth noting that regulated apprenticeship programs have traditionally been concentrated in the construction and motive power trades and, to a

lesser extent, in the service trades. The industrial trades, such as machinists and tool and die makers became regulated only recently. Apprenticeship completions in the industrial trades have therefore been few, but the registration of new trainees has increased from the initial 427 in 1978 to 1,058 in 1983. These trainees will be finishing their programs during the next few years, raising the number of completions in these trades.

Between 1984 and 1988, about 38,900 apprentices are expected to complete their training in Ontario.[8] The distribution of apprenticeship completions by broad trade groups is projected as:

- about 33 per cent (13,000 persons) in the construction trades.
- about 27 per cent (10,500 persons) in the motive power trades.
- about 15 per cent (6,000 persons) in the industrial trades.
- about seven per cent (2,800 persons) in the service trades.
- about 17 per cent (6,600 persons) in the non-regulated trades.

The National Training Program

The National Training Program (NTP), which is administered by the Canada Employment and Immigration Commission (CEIC), covers some apprenticeship occupations through its Critical Trades Skills Training (CTST).[9] The NTP goes much further, however, in offering members of the labour force opportunities to acquire new skills or to enhance their current skills or proficiency levels. During 1981-82, 13,022 trainees completed skills training under the National Institutional Training Program and 7,293 completed training under the National Industrial Training Program.

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[8]Projections of apprenticeship completions are provided by the Ministry of Colleges and Universities.

[9] CTST trainees are not included in the following data because the majority are already accounted for in the projections for the apprenticeship program.

Data are not available on how many trainees are being upgraded in their current occupations and how many are acquiring training to move into occupations at the next skill level. However, it seems reasonable to assume, for the purposes of this report, that only those completing programs between six months and two years of specific vocational training will increase the labour supply for jobs requiring such training. The other trainees are in shorter programs and are most likely being upgraded in their current occupations.

Assuming that training activity during the projection period will remain at the 1981-82 level, an additional 2,800 persons per year with specific vocational training of over six months up to and including two years will be added to the supply of workers.

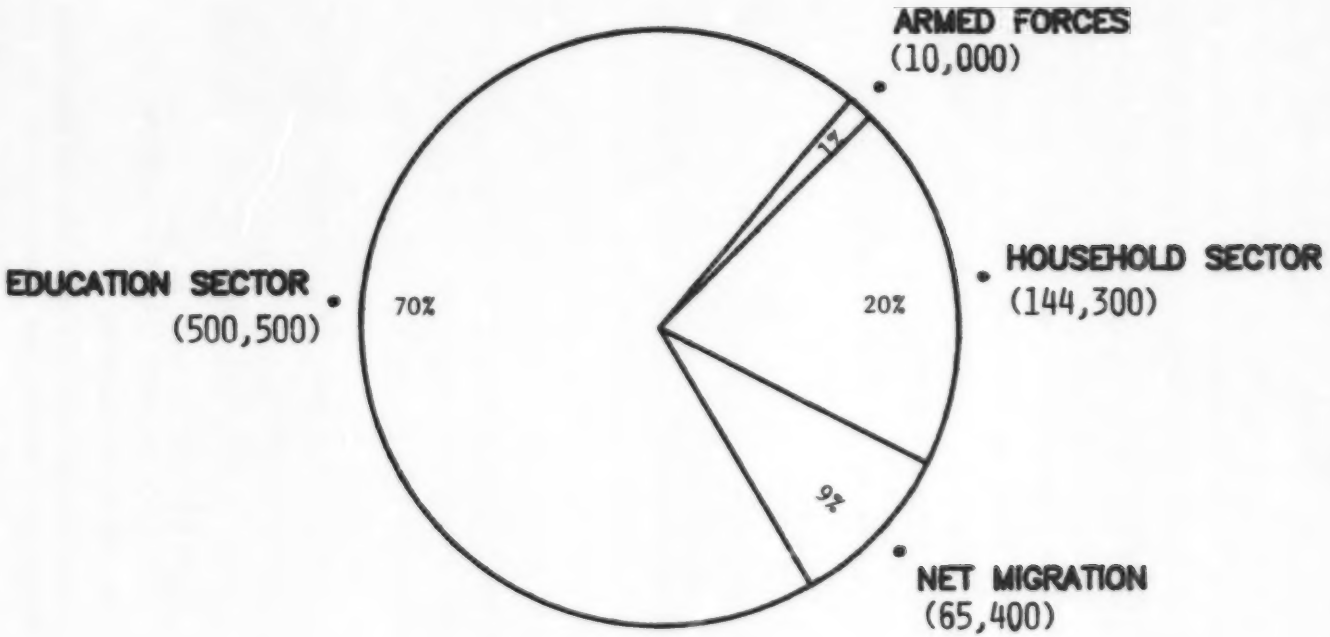
Summary

This chapter has presented projections of additions to the labour supply by source and level of education/training. During the 1984-88 period, the total additions to Ontario's labour supply from the education sector, the household sector, the armed forces and net interprovincial and international migration are projected to be 720,200 persons — an average of 144,000 persons per year. As shown in Figure 3 and Table 5, the distribution of new labour supply by source is projected as:

- about 70 per cent (100,100 persons per year) from the education sector.
- about 20 per cent (28,900 persons per year) from the household sector.
- about nine per cent (13,000 persons per year) from other provinces and countries.
- about one per cent (2,000 persons per year) from the armed forces.

FIGURE 3

PROJECTED ADDITIONS TO LABOUR SUPPLY BY SOURCE, ONTARIO, 1984–88



ADDITIONS TO
LABOUR SUPPLY (720,200)

TABLE 5

PROJECTED ADDITIONS TO THE LABOUR SUPPLY BY SOURCE, TOTAL AND ANNUAL AVERAGE: ONTARIO, 1984-88

SOURCES	ADDITIONS TO THE LABOUR SUPPLY: 1984-88	
	TOTAL	ANNUAL AVERAGE
EDUCATION SECTOR	500,500	100,100
HOUSEHOLD SECTOR	144,300	28,900
ARMED FORCES	10,000	2,000
MIGRATION	65,400	13,000
TOTAL	720,200	144,000

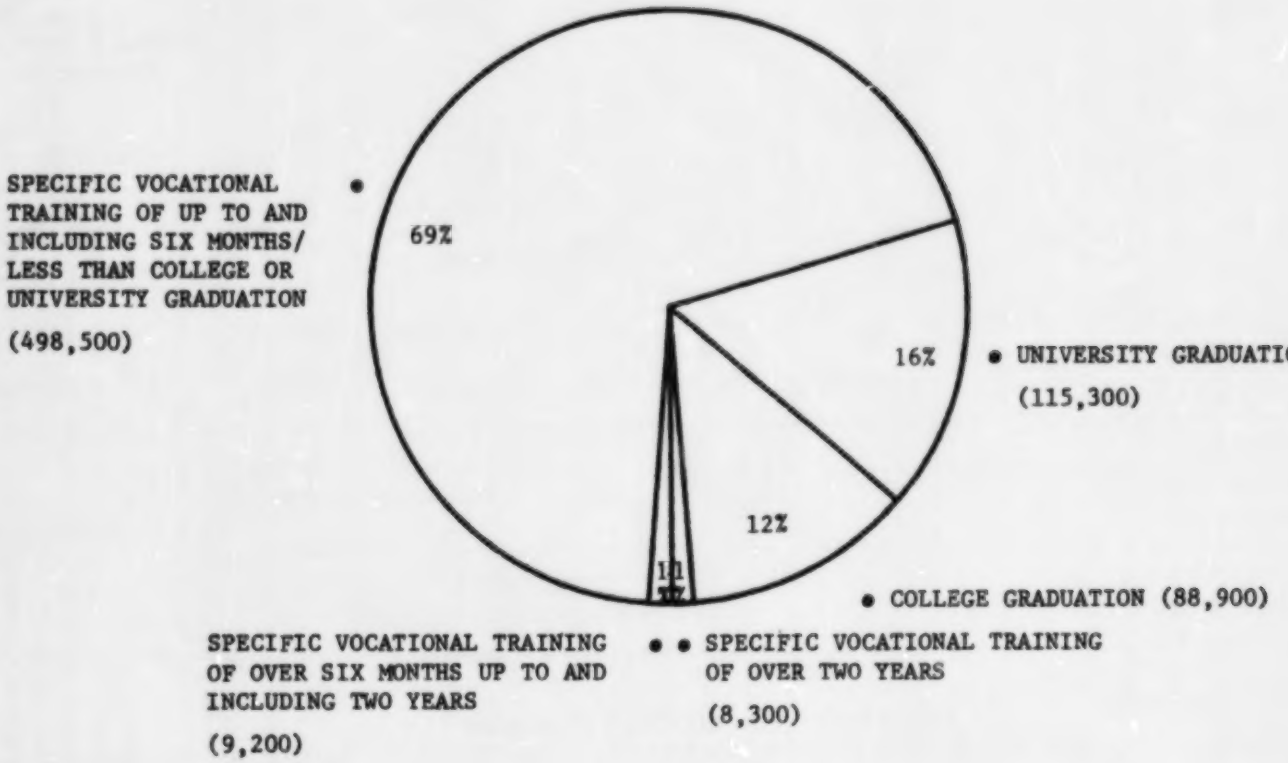
These labour force entrants will have acquired specific vocational preparation through university or college training or vocational training of various kinds. As shown in Figure 4 and Table 6, the distribution of the total additions to labour supply by type and level of specific vocational training is projected as:

- about 16 per cent (23,000 persons per year) with a university degree.
- about 12 per cent (17,700 persons per year) with a college diploma or certificate.
- about one per cent (1,700 persons per year) with specific vocational training of over two years.
- about one per cent (1,800 persons per year) with specific vocational training of over six months up to and including two years.
- about 69 per cent (99,800 persons per year) with specific vocational training of up to and including six months/less than university or college graduation.

In addition, 7,800 present members of the labour force are projected to complete an apprenticeship program and become qualified to enter highly skilled trades that require more than two years of training. An additional 2,800 persons will complete institutional or industrial training programs and be qualified to enter medium-skilled trades that require over six months up to and including two years of specific vocational training. At the same time, the supply of workers without specific vocational training of more than six months will be reduced by 10,600 as they enter the medium- and highly-skilled trades.

FIGURE 4

PROJECTED ADDITIONS TO LABOUR SUPPLY BY LEVEL OF EDUCATION/TRAINING, ONTARIO, 1984 – 1988



ADDITIONS TO LABOUR SUPPLY (720,200)

TABLE 6

PROJECTED ADDITIONS TO THE LABOUR SUPPLY BY SOURCE AND LEVEL OF EDUCATION/TRAINING, ANNUAL AVERAGE: ONTARIO, 1984-88

EDUCATION/TRAINING	ADDITIONS TO LABOUR SUPPLY BY SOURCE					SKILLS TRAINING & UPGRADING OF LABOUR FORCE			GRAND TOTAL
	Education Sector	Household Sector	Armed Forces	Migration	Total	Apprenticeship	Institutional & Industrial Training	Total	
University Graduates	19,200	1,600	200	2,000	23,000	-	-	-	23,000
College Graduates	12,900	2,700	100	2,900	17,700	-	-	-	17,700
Specific Vocational Training of over 2 years	200	-	400	1,100	1,700	7,800	-	7,800	9,500 [a]
Specific Vocational Training of over 6 months up to and including 2 years	900	-	300	600	1,800	-	2,800	2,800	4,600 [a]
Specific Vocational Training of up to and including 6 months/ Less than College or University Graduation	66,900	24,600	1,000	7,300	99,800	-7,800	-2,800	-10,600	89,200 [b]
TOTAL	100,100	28,900	2,000	13,000	144,000	-	-	-	144,000

Note: [a]Includes skills training programs (i.e., apprenticeship and National Training Program), that provide training, re-training and upgrading to persons who are members of the labour force. While these programs do not increase the total supply of labour, they do increase the supply for jobs requiring such training.

[b]As members of the labour force complete skills training programs and become qualified for jobs that require specific vocational training of over six months, there is a corresponding decrease in the supply of labour with specific vocational training of up to and including six months. The necessary adjustments have been made to the figures for the labour supply in this category.

CHAPTER III

THE LABOUR MARKET OUTLOOK FOR ONTARIO

This chapter examines the potential new pressures on the labour market in Ontario over the next five years. To do so, it compares the job openings projected to become available and the additions to the labour supply.[1] In other words, it considers flow imbalances over time.[2] This analysis at the margin indicates that if new requirements are not satisfied by new supplies, there will be additional pressures on the labour market in Ontario over the next five years.

Overall Labour Market Outlook: 1984-88

Table 7 provides a comparison of the projected job openings and additions to the labour supply. Between 1984 and 1988, total job openings in Ontario are projected to range from 536,800 (or an average of 107,400 per year) in the low-growth scenario to 937,500 (or an average of 187,500 per year) in the high-growth scenario. During the same period, 720,200 persons (or an average of 144,000 per year) are expected to enter the labour market.

The number of new entrants to the labour market in Ontario would not be adequate to fill all the job openings expected to become available in the

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[1]Theoretically, for the purposes of computing imbalances between manpower requirements and labour supply, the number of job vacancies should be included on the demand side and the pool of unemployed workers on the supply side. However, information on job vacancies is not available at the present time. (The Job Vacancy Survey conducted by Statistics Canada was discontinued in 1978. Some attempts at projecting job vacancies have been made by Tom Siedule and Norman Leckie. See their study, Occupational Demand: Estimation and Projection, Discussion Paper Number 229, Economic Council of Canada, May 1983.) Data on the educational level of the unemployed are available from Statistics Canada's monthly Labour Force Survey, but not on their training level. Therefore, the unemployed are not explicitly included in the analysis as a potential source of supply.

[2]For discussion of flow versus stock imbalances, see David Foot's study, Labour Market Analysis with Canadian Macroeconometric Models: A Review, University of Toronto and Ontario Manpower Commission, March,

TABLE 7

COMPARISON OF PROJECTED JOB OPENINGS AND ADDITIONS TO THE LABOUR SUPPLY, TOTAL AND ANNUAL AVERAGE: ONTARIO, 1984-88

SCENARIOS	TOTAL			ANNUAL AVERAGE		
	Job Openings	Additions To The Labour Supply	Potential Incremental Surplus/Shortage	Job Openings	Additions To The Labour Supply	Potential Incremental Surplus/Shortage
LOW-GROWTH	536,800	720,200	183,400	107,400	144,000	36,600
MEDIUM-GROWTH	856,100	720,200	-135,900	171,200	144,000	-27,200
HIGH-GROWTH	937,500	720,200	-217,300	187,500	144,000	-43,500

medium- and high-growth scenarios. The projections show a difference of 135,900 persons in the medium-growth scenario, and of 217,300 persons in the high-growth scenario between projected job openings and labour force additions. This suggests that there would be employment opportunities for currently unemployed workers if they have the right qualifications, thereby easing the unemployment situation in Ontario. Only in the low-growth scenario, which depicts a virtually stagnant economy over the five-year period, would new entrants to the labour force exceed projected job openings.

The Labour Market Outlook by Level of Education/Training

The job prospects for 1984-88 entrants to Ontario's labour market are detailed in Table 8 by level of education/training. These data show that the employment outlook for university and college graduates and skilled workers with more than six months of specific vocational training appear to be promising.

The number of job openings requiring a university degree or college diploma or certificate is projected to range from 184,900 in the low-growth scenario to 279,300 in the high-growth scenario; 204,200 persons with these qualifications are expected to enter Ontario's labour market. In other words, in the low-growth scenario, job openings requiring post-secondary graduation would almost match the number of new entrants with these qualifications. In the medium- and high-growth scenarios, job openings are expected to exceed additions to the labour supply by 58,700 persons and 75,100 persons respectively. Some of these job openings may be filled by currently unemployed members of the labour force; 71,000 persons with university or college graduation were looking for work in 1983, according to the Labour Force Survey. If we include these graduates as a potential source of supply, then the shortfall would be considerably reduced.

The number of job openings that require more than six months of specific vocational training is projected to range from 65,800 in the low-growth scenario to 152,600 in the high-growth scenario. Meanwhile, the total additions to the labour supply of persons with such training from community colleges, apprenticeship, institutional and industrial training

TABLE 8

COMPARISON OF PROJECTED JOB OPENINGS AND ADDITIONS TO THE LABOUR SUPPLY BY LEVEL OF EDUCATION/TRAINING, TOTAL AND ANNUAL AVERAGE: ONTARIO, 1984-88

EDUCATION/TRAINING	JOB OPENINGS			ADDITIONS TO THE LABOUR SUPPLY	POTENTIAL INCREMENTAL SURPLUS/SHORTAGE		
	Low-Growth Scenario	Medium-Growth Scenario	High-Growth Scenario		Low-Growth Scenario	Medium-Growth Scenario	High-Growth Scenario
University or College Graduation							
Total	184,900	262,900	279,300	204,200	19,300	-58,700	-75,100
Annual Average	37,000	52,600	55,800	40,700	3,800	-11,800	-15,100
Specific Vocational Training of over 6 months							
Total	65,800	132,900	152,600	70,400 [a]	4,600	-62,500	-82,200
Annual Average	13,200	26,600	30,500	14,100	900	-12,500	-16,400
Specific Vocational Training of up to and including 6 months/ Less than University or College Graduation							
Total	286,100	460,400	505,700	445,600 [b]	159,500	-14,800	-60,100
Annual Average	57,200	92,100	101,100	89,200	31,900	-3,000	-11,900

Note: [a]Includes skills training programs (i.e., apprenticeship and National Training Program), that provide training, re-training and upgrading to persons who are members of the labour force. While these programs do not increase the total supply of labour, they do increase the supply for jobs requiring such training.

[b]As members of the labour force complete skills training programs and become qualified for jobs that require specific vocational training of over six months, there is a corresponding decrease in the supply of labour with specific vocational training of up to and including six months. The necessary adjustments have been made to the figures for the labour supply in this category.

programs, the armed forces and net migration are projected to be 70,400. Here again in the low-growth scenario, the number of job openings requiring this skill level would almost match the additions to the supply of skilled workers. In the medium- and high-growth scenarios, projected job openings exceed additions to the labour supply by 62,500 and 82,200 persons, respectively. Data on unemployed persons who might be a source of supply for these openings are not available from the Labour Force Survey.

It is important to note that there are many persons who are being trained by employers on the job, but who are not included in the data presented in this report. Little is known about the nature and magnitude of such training in industry.[3] Therefore, it is not possible to estimate the potential supply of highly trained workers available from this source. Consequently, the potential supply of workers with more than six months of specific vocational training may be understated.

Over the 1984-88 period, job openings that require neither post-secondary graduation nor specific vocational training in excess of six months are projected to range from 286,100 in the low-growth scenario to 505,700 in the high-growth scenario. During the same period, 445,600 persons will enter Ontario's labour market without completing post-secondary education or specific vocational training of more than six months.

In the medium- and high-growth scenarios, the number of job openings in this category slightly exceeds the number of new labour force entrants. But data from the Labour Force Survey suggest that more than 70 per cent of the currently unemployed workers in Ontario would be competing with the

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[3]The Ontario Manpower Commission discusses the adequacy of the on-the-job training base in its publication, Industrial Training for High-Level Skills, June, 1983. Based on its own survey of the 60 largest manufacturing and processing companies in Ontario, the Commission concluded that on-the-job training for selected high-level industrial skills was less than adequate to meet the hiring needs of the employers surveyed. However, the paucity of information on the full extent of training activities in the private sector was cited as an obstacle in developing an appropriate policy response to the industrial training problem.

new entrants for the jobs that become available in this category. In the low-growth scenario, employment prospects do not appear to be promising for workers without post-secondary education or specific vocational training of more than six months. In this scenario, additions to the labour supply are projected to exceed job openings by 159,500 over the 1984-88 period.

Many of these types of jobs have traditionally been held by women who enter the labour market from the household sector, a trend that is likely to continue. Young people who enter the labour market with some post-secondary education or less also seek these jobs. Thus, the youth unemployment problem is likely to persist over the next five years in this scenario.

Summary

This chapter provides a comparison of projected job openings with additions to the labour supply by broad levels of education/training.

- The low-growth scenario indicates job openings would fall short of the number of new entrants to the labour market in Ontario between 1984 and 1988. In the medium- and high-growth scenarios, overall job openings are expected to exceed the number of new entrants to the labour market. These two scenarios suggest emerging employment opportunities for currently unemployed workers as well as new entrants.

- The employment outlook for university and college graduates and skilled workers with more than six months of specific vocational training appears to be promising. In the low-growth scenario, job openings would almost match the number of new entrants. In the medium- and high-growth scenarios, job openings are expected to significantly exceed the number of new entrants, thereby suggesting employment opportunities for both new entrants and currently unemployed qualified workers.

- Job prospects for new entrants with neither post-secondary graduation nor specific vocational training of over six months do not appear to be good. In the low-growth scenario, job openings would fall short of the number of new entrants. In the medium- and high-growth scenarios, the number of job openings would slightly exceed the number of new entrants. One must remember, however, that the new entrants will be competing with approximately 70 per cent of the currently unemployed workers who also have this level of qualification.

APPENDIX I

Macroeconomic Projections of the Canadian and Ontario Economies: 1984-88

Peter Dungan

The Ontario Manpower Commission (OMC) requested the Institute for Policy Analysis of the University of Toronto to provide macroeconomic projections of the Canadian and Ontario economies for the period 1984-88 using the FOCUS and PRISM models.[1] In order to cover a plausible range of employment outlooks for Canada and Ontario, three macroeconomic scenarios (low-, medium- and high-growth) were prepared on the basis of three different sets of underlying assumptions concerning the foreign and domestic economic environments.

I. Medium-Growth Scenario (Basecase Projection)

The medium-growth, or basecase projection, was prepared in December 1983 as part of the Institute's ongoing research. It has also been submitted to the Royal Commission on the Economic Union and Development Prospects for Canada.[2] Appendix Table 1 presents major assumptions of this scenario.

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[1]For a description of the models, see Institute for Policy Analysis, FOCUS: Forecasting and User Simulation Model Manual and Equation Description (Version 1981 E), University of Toronto, 1982. Also, see Institute for Policy Analysis, PRISM: Provincial - Industrial Model of the Canadian Economy (Version 82A), University of Toronto, 1982.

[2]For more detailed description of the basecase projection, see Peter Dungan, National Projection Through 2005 and Provincial Projection Through 1995, PEAP Policy Study No. 84-2, Institute for Policy Analysis, University of Toronto, 1984. Copies of the study are available at the OMC on request.

APPENDIX TABLE 1

ASSUMPTIONS AND ALTERNATIVES

(Averages: 1984-88)

A. Foreign Economy:

	Low-Growth	Medium-Growth	High-Growth
U.S. Real Growth Rate (%)	2.2	3.1	4.1
U.S. Inflation Rate (GNP Deflator)(%)	4.5	4.5	4.5
U.S. Long-Term Bond Rate (%)	12.1	10.3	8.6

B. Domestic Economy: Changes from Medium-Growth Scenario

	Low-Growth	High-Growth
Private Investment ($71 Billion)	-3.0	+0.9
Labour Productivity (% of Medium-Growth Scenario)	-2.1	+1.6

a. Major Assumptions

- The U.S. projection features sustained growth trending to a potential growth path. The inflation gains of the last recession are retained, but with inflation resisting a fall below 4.0 per cent. Real interest rates decline gradually but remain at rather high levels.

- Population projections were based on work done by David Foot[3] but updated using current data. Foot's average projection was used; this assumed intermediate fertility and mortality factors and net immigration a bit over 60,000 per year. Immigration is more widely spread across age groups instead of being concentrated in younger brackets as in the past.

- The projection features an aging population, with growth in the younger cohorts falling during the 1982-88 period.

b. Summary of Medium-Growth Projection

CANADA

- Real GNP in Canada is projected to grow at an average annual rate of 3.5 per cent between 1984 and 1988 (see Appendix Table 2).

- The inflation gains of the last two years are held because of persistent slack in the economy throughout the projection period; as in the U.S., the inflation rate resists moving much below four per cent, and remains (in part by assumption) somewhat above the U.S. rate.

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[3]David Foot, Canada's Population Outlook, Canadian Institute for Economic Policy, Ottawa, 1983.

APPENDIX TABLE 2

SUMMARY OF THE NATIONAL ECONOMY

(Averages: 1984-88)

	Low-Growth	Medium-Growth	High-Growth
Real GNP Growth Rate (%)	1.8	3.5	4.4
Consumption Growth Rate (%)	2.5	3.7	4.1
Investment Growth Rate (Residential and Non-Residential) (%)	2.2	6.2	8.8
Inflation Rate (GNP Deflator) (%)	5.1	5.1	5.1
Industrial Bond Rate (%)	13.2	11.4	9.7
Exchange Rate (US $/CDN $)	0.82	0.82	0.82
Total Government Surplus (+)/ Deficit (-) ($ Billion)	-19.1	-10.6	-5.2
Participation Rate (%)	63.9	64.9	65.2
Labour Force Growth Rate (%)	1.1	1.5	1.6
Employment Growth Rate (%)	1.0	2.3	2.6
Unemployment Rate (%)	12.0	9.6	8.7
Growth in Real Wage (%)	-0.3	-0.3	-0.3
Growth in Real Personal Disposable Income (%)	1.3	2.6	3.1

Source: Institute for Policy Analysis, University of Toronto, March 1984.

- Employment growth in Canada is projected to average 2.3 per cent per year between 1984 and 1988 compared to 3.1 per cent per year in the 1970's.

- The unemployment rate falls only gradually averaging 9.6 per cent over the 1984-88 period.

ONTARIO

- Ontario's economy will grow at about the same rate as the national average. The average growth rate of real domestic product in Ontario will be about 3.5 per cent for the 1984-88 period (see Appendix Table 3).

- Employment in Ontario is projected to grow at an annual rate of 2.4 per cent between 1984 and 1988, a rate much lower than the 3.2 per cent growth rate experienced in the past decade.

- The unemployment rate in Ontario will decline gradually averaging 7.7 per cent over the 1984-88 period.

II. Alternative Scenarios

Every economic projection is subject to a good deal of error. While sources of error can be reduced, they cannot be eliminated. It is, therefore, important to allow for error and to check the sensitivity of results to alternative projections. At the request of OMC, the Institute for Policy Analysis generated two alternatives around the 'basecase' on medium-growth projection used by the OMC in developing its manpower projections. One projection examines risks on the 'down' side of the economy while the other asks what would happen if the world did better than under the basecase.

APPENDIX TABLE 3

SUMMARY OF THE ONTARIO ECONOMY

(Averages: 1984-88)

	Low-Growth	Medium-Growth	High-Growth
Growth of Real Provincial GDP (at Factor Cost) (%)	1.6	3.5	4.4
Provincial GDP Deflator (% Change)	4.9	4.9	4.9
Participation Rate (%)	67.0	67.7	67.9
Labour Force Growth Rate (%)	1.2	1.5	1.6
Employment Growth Rate (%)	0.9	2.4	2.7
Unemployment Rate (%)	11.1	7.7	6.5
Real Personal Disposable Income per Capita ($71 '000)	4.2	4.4	4.5

Source: Institute for Policy Analysis, University of Toronto, March 1984.

The key variables adjusted to reflect these risks were: U.S. real growth, real interest rates (but not inflation rate) in the U.S. and Canada, and Canadian investment and productivity growth (Appendix Table 1 also summarizes the adjustments).

The variation in real interest rates springs from major uncertainties regarding the evolution of the U.S. deficit problem and its impact on money markets. In the "low-growth" scenario, it is assumed that real U.S. interest rates would be forced well above basecase levels by the U.S. deficit, with the effect of reducing U.S. real growth and of raising Canadian real rates by equal amounts to forestall depreciation of the dollar. Under the high-growth scenario, lower U.S. real rates and a higher U.S. real growth path are assumed. Canadian rates are able to follow the U.S. rates down.

A second major question overhanging the Canadian projection is the future performance of private non-residential investment, which has remained weak through 1983. Aside from the effect of real rates, investment could move down (or up) from the basecase, and such a change has also been included in each alternative.

Finally, the performance of aggregate labour productivity is another question mark for the medium-term. The "low-growth" scenario features relatively low labour-productivity performance - not unreasonable when the cost of capital is relatively higher. Of course, poorer labour productivity, all else given, actually makes the employment results of the "low-growth" scenario less serious. The "high-growth" alternative features increased productivity performance - which also serves to mitigate somewhat the beneficial impact of this scenario on employment.

a. Summary of Low-Growth Projection

CANADA

- In the low-growth scenario, real GNP in Canada would grow at an average annual rate of 1.8 per cent between 1984 and 1988 (see Appendix Table 2).

- Employment in Canada would grow by only one per cent per year between 1984 and 1988.

- The unemployment rate in Canada would average around 12 per cent over the 1984-88 period.

ONTARIO

- The average growth rate of real domestic product in Ontario would be about 1.6 per cent per year for the 1984-88 period. Note that this scenario, with higher real interest rates and lower investment reduces growth in Ontario more than in Canada as a whole (see Appendix Table 3).

- Employment growth in Ontario would average only 0.9 per cent per year between 1984 and 1988.

- The unemployment rate in Ontario would average 11.1 per cent over the 1984-88 period.

b. Summary of High-Growth Projection

CANADA

- In the high-growth scenario, real GNP in Canada would grow at an average annual rate of 4.4 per cent between 1984 and 1988 (see Appendix Table 2).

- Employment in Canada would grow by 2.6 per cent per year between 1984 and 1988.

- The unemployment rate in Canada would average about 8.7 per cent over the 1984-88 period.

ONTARIO

- The average growth rate of real domestic product in Ontario would be 4.4 per cent per year for the 1984-88 period (see Appendix Table 3).

- Employment growth in Ontario would average 2.7 per cent per year between 1984 and 1988.

- The unemployment rate in Ontario would average around 6.5 per cent over the 1984-88 period.

III. Projections of Employment by Industry in Ontario

The PRISM model also yields an estimate of employment by industry in Ontario. Estimates for the three scenarios are summarized in Appendix Table 4.

As can be seen, the major contributor to employment growth in Ontario will continue to be the services-producing industries.

In fact, in the low-growth scenario, the services-producing industries are the only sectors to experience any growth in employment at all. Within the services-producing sector, the most significant contribution to employment growth occurs in community, business and personal services. The only other industries with a positive growth in employment are finance, insurance and real estate, public administration and utilities. In this scenario, both the primary and secondary goods-producing industries actually experience a decline in their employment levels.

The medium- and high-growth scenarios yield employment growth in most sectors; however, the greatest share of net new employment creation is still in services.

APPENDIX TABLE 4

INDUSTRIAL CONTRIBUTION TO EMPLOYMENT GROWTH: ONTARIO, 1971-88

INDUSTRY	AVERAGE ANNUAL RATE OF CHANGE IN EMPLOYMENT (%)				PERCENTAGE CONTRIBUTION TO TOTAL EMPLOYMENT GROWTH*			
	Historical[a]	Projected[b]: 1984-88			Historical[a]	Projected[b]: 1984-88		
	1971-81	Low-Growth	Medium-Growth	High-Growth	1971-81	Low-Growth	Medium-Growth	High-Growth
Primary Goods-Producing Industries	1.0	-1.2	0	0.4	1.5	-5.6	0.1	0.8
Agriculture/Fishing	1.4	-1.0	-0.2	-0.1	1.4	-3.7	-0.3	-0.1
Forestry	0.6	-3.4	-1.3	-0.3	-0.1	-1.1	-0.2	0
Mining	0.4	-0.8	1.8	2.9	0.2	-0.8	0.6	0.9
Secondary Goods-Producing Industries	2.2	-1.7	1.1	2.0	22.4	-55.3	13.1	20.9
Manufacturing	2.4	-1.8	1.0	1.7	18.7	-45.9	8.9	14.1
Construction	1.5	-1.4	1.8	3.4	2.5	-9.8	3.6	6.3
Utilities	3.7	0.4	1.3	1.3	1.3	0.4	0.6	0.5
Services-Producing Industries	4.0	2.1	3.0	3.4	76.0	160.7	86.7	78.5
Transportation/Communications	2.7	-0.3	1.0	1.2	4.9	-2.1	2.4	2.6
Trade	3.6	-0.3	1.7	2.3	17.5	-5.7	11.9	14.0
Finance	4.4	2.9	3.9	4.0	7.5	21.0	10.3	9.2
Services	4.8	3.7	4.2	4.1	39.8	137.2	57.9	48.9
Public Administration	3.1	1.4	1.5	1.6	6.2	10.3	4.2	3.8
TOTAL	3.2	0.9	2.3	2.7	100.0	100.0	100.0	100.0

Note: * Figures may not add up to totals because of rounding.

Source: [a] Statistics Canada, Labour Force Survey.
[b] Institute for Policy Analysis, University of Toronto, March 1984.

In the medium-growth scenario, the share of services in net new employment creation at 87 per cent is somewhat above the 1971-81 average of 76 per cent. The share of goods-producing sectors is correspondingly lower.

In the high-growth scenario, with growth stimulated by additional investment and import replacement, the services-producing sector accounts for 79 per cent of the growth in employment - a figure much closer to the 1971-81 average. Community, business and personal services industries account for close to half the growth in employment, and trade accounts for another 14 per cent.

In this scenario, the goods-producing sector accounts for about 22 per cent of employment growth in Ontario. Manufacturing is the major contributor in this sector, accounting for 14 per cent of employment growth.

APPENDIX II

Comparison of Available Projections of National Output and Employment

Available short-term projections for up to three years include those from Data Resources of Canada and the Royal Bank of Canada. Medium-term projections for up to 10 years into the future include those from Data Resources of Canada and the Conference Board of Canada. A comparison of available short- and medium-term projections of national output and employment appears in Appendix Table 5.

The low-, medium- and high-growth scenarios prepared by the Institute for Policy Analysis at the University of Toronto cover the range of projections produced by the various forecasting agencies.

APPENDIX TABLE 5

COMPARISON OF VARIOUS NATIONAL OUTPUT AND EMPLOYMENT PROJECTIONS, 1984-88

YEAR	MEDIUM - TERM PROJECTIONS					SHORT - TERM PROJECTIONS	
			Institute for Policy Analysis (U of T)				
	Conference Board of Canada	Data Resources	Low-Growth	Medium-Growth	High-Growth	Data Resources	Royal Bank
			Annual Rate of Change in Real GNP				
1984	3.3	5.1	2.2	3.9	5.0	5.1	5.1
1985	0.5	3.1	-0.1	3.6	4.9	3.1	3.0
1986	0.1	2.9	0.9	3.0	4.3	3.0	
1987	2.3	3.4	2.5	3.5	4.1		
1988	2.4	3.9	3.5	3.7	3.7		
			Annual Rate of Change in Employment				
1984	2.2	3.0	2.2	2.8	3.3	2.9	3.5
1985	0.9	2.3	-0.3	2.2	2.9	2.3	2.0
1986	-0.2	2.1	-0.2	1.9	2.8	2.1	
1987	0.7	2.1	1.2	2.1	1.7		
1988	2.2	2.6	2.2	2.6	2.2		
			Level of Employment				
1984	10,964	11,053	10,968	11,036	11,091	11,049	11,110
1985	11,060	11,305	10,940	11,274	11,415	11,303	11,332
1986	11,043	11,541	10,913	11,484	11,741	11,537	
1987	11,124	11,786	11,049	11,724	11,944		
1988	11,371	12,097	11,294	12,030	12,209		
Publication Date	March 1984	January 1984	March 1984			December 1983	December 1983

APPENDIX III

Methodology for Estimating Job Openings due to Replacement Needs

Job openings due to replacement needs are estimated on the basis of three components: deaths, retirements and other age-related withdrawals.

1. Deaths

Projections of job openings due to deaths as the work force ages each year were obtained by applying the age-sex specific mortality rates to the 1981 Census stock of the employed labour force as it ages over the projection period.

2. Retirement and Other Age-Related Withdrawals

Projections of job openings due to probable withdrawals from the labour force as the work force ages each year were calculated by sex and single years of age (50 to 69 years). This was done by applying the relative change in participation rate from one single year age cohort to the next older cohort to the survivors of the 1981 Census stock of the employed labour force as they age over the projection period.

The estimates of probable withdrawals from the employed labour force include early retirements for those in the 50 to 69 age group.

All persons in the labour force aged 70 years are assumed to retire from the labour force.

APPENDIX IV

Methodology for Estimating Job Openings by Level of Education/Training

The number of job openings by level of education/training was computed in two steps:

a) The minimum education requirements for each individual occupation were obtained in consultation with the training specialists at the Ministry of Colleges and Universities from the Canadian Classification and Dictionary of Occupation (CCDO). In the CCDO, Specific Vocational Preparation (SVP) is measured by the amount of time needed to acquire the information, techniques and skills required for average work performance in a specific occupation. SVP includes training given in any of the following forms:

- university or college training
- vocational training
- apprenticeship training
- in-plant training
- on-the-job training
- experience in other jobs

University or college training of any type is considered equivalent to at least two years of SVP. In the case of all other forms of vocational training, SVP depends on the duration of training.

The individual occupations were then clustered by level of education/training requirements into the following six categories:

- university graduation.
- university or college graduation.
- college graduation.
- specific vocational training of over two years.
- specific vocational training of over six months up to and including two years.
- specific vocational training of up to and including six months/less than college or university graduation.

b) The proportion of workers in each of the categories was computed using the 1981 Census data on employment by occupation. It is worth noting that the proportion of workers in each category has not changed significantly since 1971. These proportions were then used to distribute the projected number of total job openings by level of education/training.

Distribution of Workers in Occupations By Level of Education/ Training Required

	1971	1981
- University Graduation	7.3	7.4
- University or College Graduation	10.4	13.7
- College Graduation	6.9	7.9
- Specific Vocational Training of over Two Years	12.7	11.3
- Specific Vocational Training of over Six Months up to and including Two Years	7.9	6.8
- Specific Vocational Training of up to and including Six Months/Less than College or University Graduation	54.8	52.8

APPENDIX V

Methodology for Estimating Labour Supply from the Education Sector

The projections of labour supply from secondary schools, colleges and universities in Ontario were prepared using a three-step process:

(i) The historical data by type of institution on full-time enrolments, graduates and those who leave the system without completing their education (i.e. "non-graduates"), were extrapolated, using the 'grade survival' method to develop projections of the number of graduates and non-graduates by broad education category (See Appendix Table 6).

(ii) Since not all of these graduates and non-graduates enter the labour force, it is necessary to identify those who will be available to the labour force for the first time.[1]

Data on the proportion of graduates destined for the labour force are available from a number of sources.[2] To estimate the number of graduates available to the labour force in Ontario, these ratios were applied to the

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[1]Some of these students continue their education, while others leave the province or return to their home countries.

[2]Data on the proportion of secondary school graduates destined for employment in Ontario were obtained from the Ministry of Education.

Data on the proportion of CAATS graduates who are available for work were obtained from the OCIS Student Outcome Analysis System.

Data on the proportion of university graduates potentially available to the labour force were obtained from the 1982 Ontario Graduate Employment Survey data.

APPENDIX TABLE 6

PROJECTED NUMBER OF GRADUATES AND NON-GRADUATES FROM THE EDUCATION SECTOR, TOTAL AND ANNUAL AVERAGE: ONTARIO, 1984-88

EDUCATION SECTOR	TOTAL			ANNUAL AVERAGE		
	Graduates	Non-Graduates	Total	Graduates	Non-Graduates	Total
Secondary Schools	791,200	399,400	1,190,600	158,200	79,900	238,100
CAATS	125,100	129,400	254,500	25,000	25,900	50,900
Universities	167,500	88,900	256,400	33,500	17,800	51,300
TOTAL	1,083,800	617,700	1,701,500	216,700	123,600	340,300

projected number of graduates at each level of the education system.

Unlike the data for graduates, data on the destination of non-graduates are scarce.[3] However, the limited information available was used to adjust the projected number of non-graduates to obtain estimates of the number who would be available to the labour force in Ontario.

(iii) Some of the graduates and non-graduates identified as potentially available to the labour force in the projections obtained above are already members of the labour force. Information on the labour force participation rates of full-time students by type of institution was obtained from Statistics Canada's Labour Force Survey. In order to estimate the number of new entrants to the labour force, we have excluded from the projections described above the proportion of students already in the labour force.

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[3]Data on the proportion of secondary school non-graduates destined for employment in Ontario were obtained from the Ministry of Education.

Data on the proportion of CAATS non-graduates who are available for work were obtained from the OCIS Student Outcome Analysis System.

Since no data on the labour force participation of non-graduates are available at the university level, it was assumed that all of them will be potentially available to the labour force in Ontario.

APPENDIX VI

Methodology for Estimating Labour Supply from the Household Sector

The term household sector is used to refer to persons who are not members of the labour force, full-time students, members of the armed forces or inmates of institutions.

For the purposes of this report, total additions to the labour supply are defined to comprise potential labour supply from various sources such as the education sector, interprovincial and international migration, the armed forces and the household sector. Within a given time period, when total additions to the labour supply exceed labour force attrition due to death and withdrawals, the size of the labour force will increase.

Based on projections of the population and labour force participation rates, described in Appendix 1, growth in the labour force was estimated. Using the 1981 Census data, attrition from the labour force due to deaths and withdrawals was calculated. The estimated growth in the labour force combined with the labour force attrition due to deaths and withdrawals provide an estimate of total additions to the labour force. The potential labour supply from the household sector is then determined by the difference between the total additions to the labour supply and potential supply from the remaining sectors.

Information regarding the educational attainment of labour force entrants from the household sector is not available. However, since a large number of them are likely to be adult women, data on the educational attainment of adult women who were not in the labour force were obtained from Statistics Canada's labour force survey and used to distribute labour force entrants from the household sector by level of education.

APPENDIX VII

Methodology for Estimating Labour Supply due to Net Migration

The methodology used to estimate labour supply due to net migration is briefly described below.

First, the levels of international and interprovincial migration are determined based on population projections.

Second, detailed information from the 1981 Census on the labour force activity and educational and occupational characteristics of in-migrants and immigrants to Ontario and out-migrants from Ontario was obtained from Statistics Canada.

No information was available on the characteristics of emigrants. It was assumed that emigrants had characteristics similar to those of immigrants. The census covers the migration movements during the 1976-81 period, when Ontario experienced large outflows to the western provinces. Since there is, at present, a trend toward return migration, which is expected to continue, albeit at a slower pace, it was assumed that the characteristics of in-migrants to Ontario would be the same as those of out-migrants. Based on the 1981 Census information, the following calculations were made:

- From the total levels of migration, the proportion of persons less than 15 years old were excluded to obtain those of working-age.

- The relevant labour force participation rates were applied to migrants of working-age to determine the number of migrants destined for the labour force.

- The number of labour force migrants were then distributed by level of education/training based on the Census information.